

Ser. No. 10/536,829
Docket No. Y31-184577C/KK
NGB.534

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AMENDMENTS TO THE CLAIMS

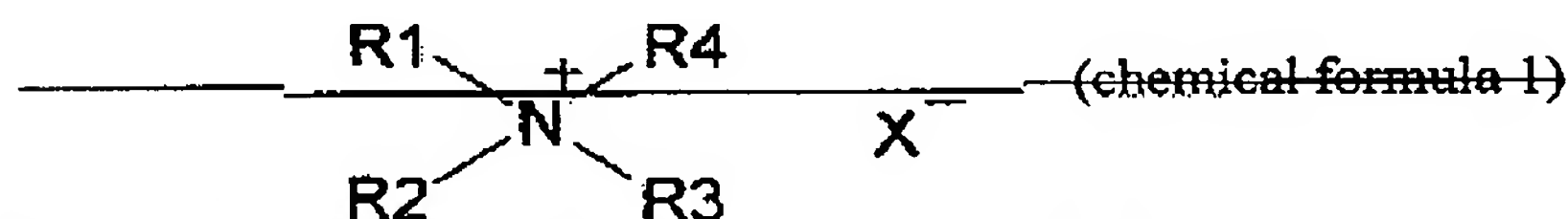
Please cancel claims 12 and 15-17 without prejudice or disclaimer.

1. (Canceled)

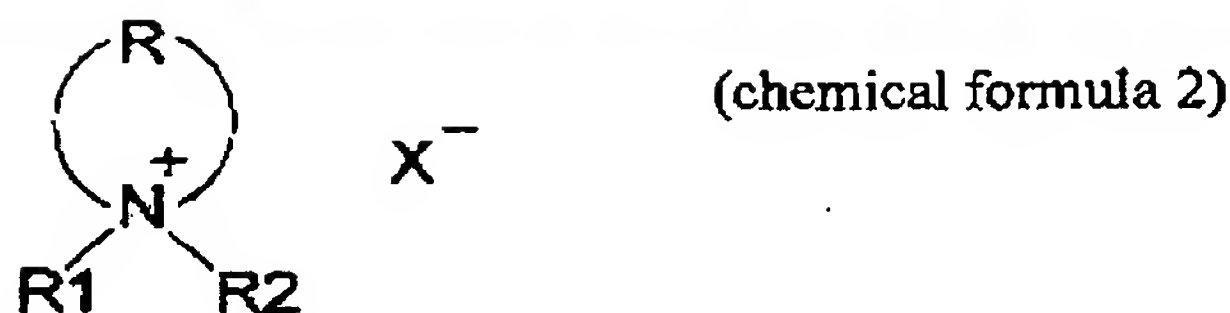
2. (Currently amended) A nonaqueous electrolyte, comprising:

an organic solvent and a lithium salt dissolved in the organic solvent; and

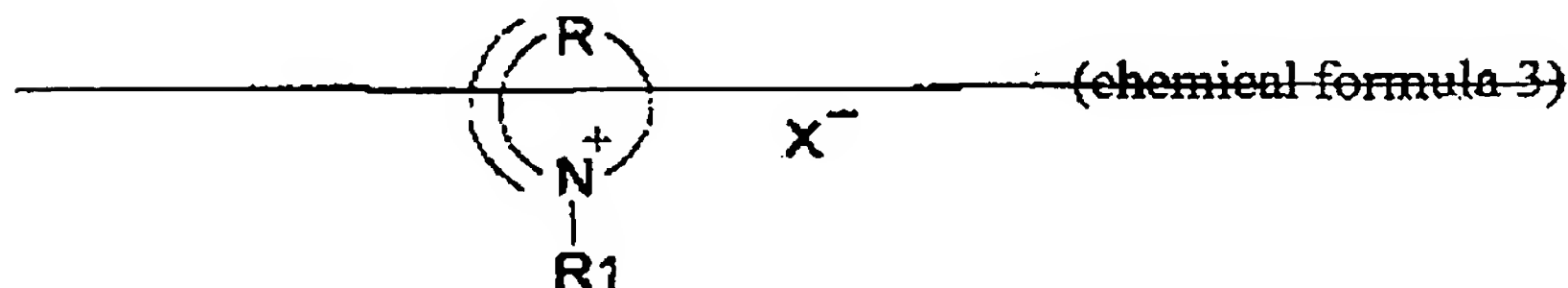
a quaternary ammonium salt in an amount of 0.06 mol/L or greater and 0.5 mol/L or less, the quaternary ammonium salt having a structure represented by ~~any of (chemical formula 1), (chemical formula 2), and (chemical formula 3):~~



~~(wherein R1, R2, R3, and R4 each are either an alkyl group having 1-6 carbon atoms or an alkyl group in which at least part of the hydrogen atoms each has been replaced by a fluorine atom; and X- is a fluorine-containing anion, and wherein R1=R2=R3=R4 is excluded);~~



(wherein R is a divalent organic linking group having a main chain which has 4-5 atoms and is constituted of at least one member selected from carbon, oxygen, nitrogen, sulfur, and phosphorus; R1 and R2 each are either an alkyl group having 1-6 carbon atoms or an alkyl group in which at least one part of the hydrogen atoms ~~each~~ has been replaced by a fluorine atom; and X- is a fluorine-containing anion);



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~~(wherein R is an organic linking group or an organic linking group forming an aromatic ring, the organic linking groups each having a main chain which has 4-5 atoms and is constituted of at least one member selected from carbon, oxygen, nitrogen, sulfur, and phosphorus and having one single bond end and one double bond end; R1 is an alkyl group having 1-6 carbon atoms or an alkyl group in which at least part of the hydrogen atoms each has been replaced by a fluorine atom; and X⁻ is a fluorine-containing anion).~~

3. (Previously presented) The nonaqueous electrolyte of claim 2, wherein said organic solvent comprises one or more organic solvents selected from the group consisting of ethylene carbonate, propylene carbonate, butylene carbonate, γ -butyrolactone, and γ -valerolactone.

4. (Previously presented) The nonaqueous electrolyte of claim 2, wherein the nonaqueous electrolyte comprises one or more members selected from the group consisting of BF_4^- , PF_6^- , CF_3SO_3^- , $\text{N}(\text{CF}_3\text{SO}_2)_2^-$, $\text{N}(\text{C}_2\text{F}_5\text{SO}_2)_2^-$, $\text{N}(\text{CF}_3\text{SO}_2)(\text{C}_4\text{F}_9\text{SO}_2)^-$, $\text{C}(\text{CF}_3\text{SO}_2)_3^-$, and $\text{C}(\text{C}_2\text{F}_5\text{SO}_2)_3^-$.

5. (Previously presented) A nonaqueous-electrolyte battery, comprising:

a positive electrode, a negative electrode, and a nonaqueous electrolyte according to claim

2.

6. (Previously presented) The nonaqueous-electrolyte battery of claim 5, wherein the negative electrode comprises a graphite.

7. (Previously presented) The nonaqueous-electrolyte battery of claim 5, further comprising:

a sheath formed over said positive and negative electrodes and said electrolyte, said sheath comprising a metal/resin composite material.

8. (Canceled)

9. (Previously presented) A nonaqueous-electrolyte battery which comprises a positive electrode, a negative electrode, and a nonaqueous electrolyte according to claim 3.

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10. (Previously presented) A nonaqueous-electrolyte battery which comprises a positive electrode, a negative electrode, and a nonaqueous electrolyte according to claim 4.

11. (Previously presented) The nonaqueous electrolyte of claim 2, wherein said organic solvent comprises a member selected from the group consisting of propylene carbonate and butylene carbonate.

12. (Canceled)

13. (Previously presented) The nonaqueous electrolyte of claim 2, wherein the quaternary ammonium salt having a structure represented by chemical formula 2 comprises a combination of an anion and a member selected from the group consisting of a pyrrolidinium cation, piperidinium cation, and pyrrolium cation.

14. (Previously presented) The nonaqueous electrolyte of claim 13, wherein the pyrrolidinium cation comprises a member selected from the group consisting of a 1,1-dimethylpyrrolidinium ion, 1-ethyl-1-methyl-pyrrolidinium ion, 1-methyl-1-propylpyrrolidinium ion, and 1-butyl-1-methylpyrrolidinium ion,

wherein the piperidinium cation comprises a member selected from the group consisting of a 1,1-dimethylpiperidinium ion, 1-ethyl-1-methylpiperidinium ion, 1-methyl-1-propylpiperidinium ion, and 1-butyl-1-methylpiperidinium ion, and

wherein the pyrrolium cation comprises a member selected from the group consisting of a 1,1-dimethylpyrrolium ion, 1-ethyl-1-methylpyrrolium ion, 1-methyl-1-propylpyrrolium ion, and 1-butyl-1-methylpyrrolium ion.

15-17. (Canceled)

18. (Previously presented) The nonaqueous electrolyte of claim 2, wherein said amount of said quaternary ammonium salt is 0.1 mol/L or greater and 0.35 mol/L or less.

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19. (Previously presented) The nonaqueous electrolyte of claim 2, wherein said lithium salt comprises a member selected from the group consisting of LiBF_4 , LiPF_6 , LiCF_3SO_3 , $\text{LiN}(\text{CF}_3\text{SO}_2)_2$, $\text{LiN}(\text{C}_2\text{F}_5\text{SO}_2)_2$, $\text{LiN}(\text{CF}_3\text{SO}_2)(\text{C}_4\text{F}_9\text{SO}_2)$, $\text{LiC}(\text{CF}_3\text{SO}_2)_3$, and $\text{LiC}(\text{C}_2\text{F}_5\text{SO}_2)_3$.

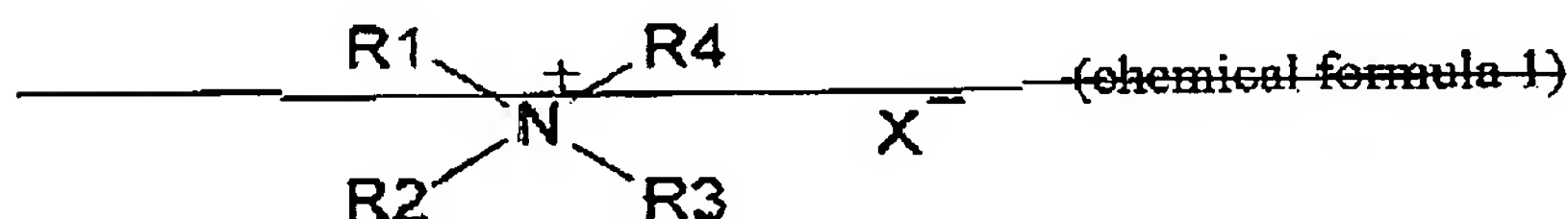
20. (Currently amended) A nonaqueous-electrolyte battery, comprising:

a power generating unit comprising a positive electrode, a negative electrode, and a separator interposed between said positive and negative electrodes; and

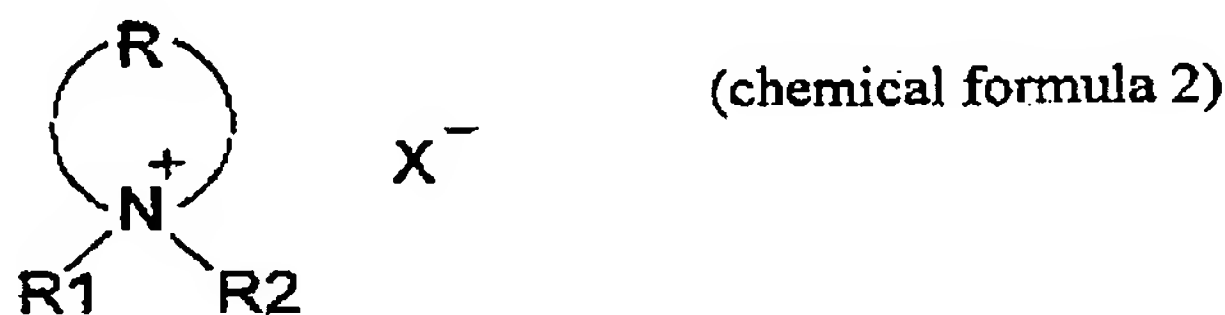
a nonaqueous electrolyte impregnated into said power generating unit, said nonaqueous electrolyte comprising:

an organic solvent and a lithium salt dissolved in the organic solvent; and

a quaternary ammonium salt in an amount of 0.06 mol/L or greater and 0.5 mol/L or less, the quaternary ammonium salt having a structure represented by any of (chemical formula 1), (chemical formula 2), and (chemical formula 3):



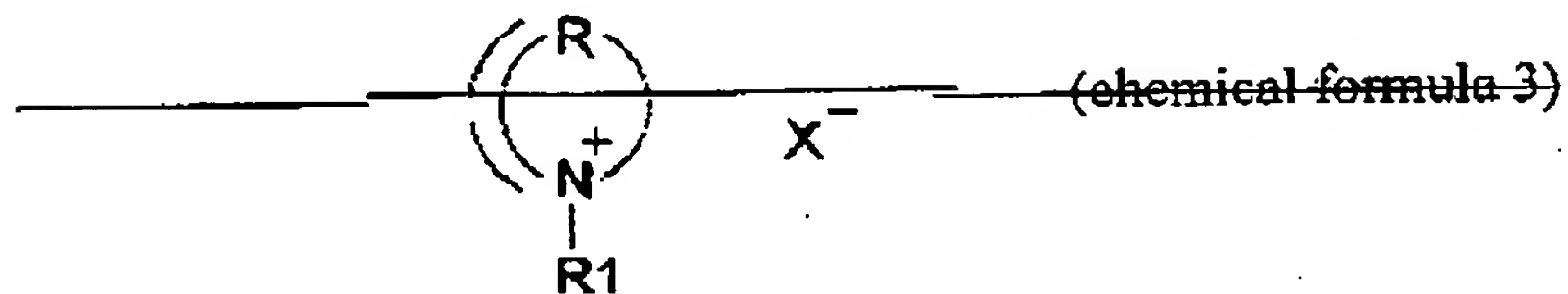
~~(wherein R1, R2, R3, and R4 each are either an alkyl group having 1-6 carbon atoms or an alkyl group in which at least part of the hydrogen atoms each has been replaced by a fluorine atom; and X- is a fluorine-containing anion, and wherein R1=R2=R3=R4 is excluded);~~



(wherein R is a divalent organic linking group having a main chain which has 4-5 atoms and is constituted of at least one member selected from carbon, oxygen, nitrogen, sulfur, and phosphorus; R1 and R2 each are either an alkyl group having 1-6 carbon atoms or an alkyl group in which at least one part of the hydrogen atoms each has been replaced by a fluorine atom; and X- is a fluorine-containing anion);

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~~(wherein R is an organic linking group or an organic linking group forming an aromatic ring, the organic linking groups each having a main chain which has 4-5 atoms and is constituted of at least one member selected from carbon, oxygen, nitrogen, sulfur, and phosphorus and having one single bond end and one double bond end; R1 is an alkyl group having 1-6 carbon atoms or an alkyl group in which at least part of the hydrogen atoms each has been replaced by a fluorine atom; and X⁻ is a fluorine-containing anion).~~